CONCLUSIONS Implantation of an Impella pump is performed more frequently in cardiogenic shock patients. Our preliminary data emphasize the impact on early improvement in hemodynamic parameters and rapid lowering of lactate levels. Consequent and early use of a microaxial pump in left-ventricular failure significantly contributes to improved survival.

CATEGORIES CORONARY: Hemodynamic Support and Cardiogenic Shock

KEYWORDS Cardiogenic shock, Impella, Left ventricular assist device

TCT-189

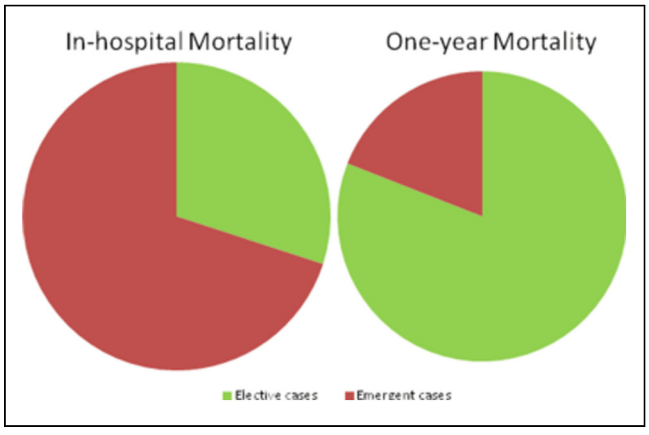
The Use of Mechanical Circulatory Support Devices during TAVR: A Single Center Experience with Long Term Follow-up

Vikas Singh,[1] Rodrigo Mendirichaga,[1] Abdulla Damluji,[1] Conrad Macon,[2] Mohamad Kabach,[1] Magdalena Murman,[1] Donald Williams,[3] Eduardo de Marchena,[1] Claudia A. Martinez,[4] Carlos Alfonso,[4] Mauro Moscucci,[1] Alan W. Heldman,[4] Mauricio G. Cohen,[5] William W. O'Neill[6]
[1]University of Miami Miller School of Medicine, Miami, FL; [2]University of Miami School of Medicine, Miami, FL; [3]University of Miami School of Medicine, Miami, FL; [4]University of Miami, Miller School of Medicine, Miami, FL; [5]University of Miami Miller School of Medicine, Miami, United States; [6]Henry Ford Hospital, Detroit, United States

BACKGROUND High-risk surgical patients for transcatheter aortic valve replacement (TAVR) represent an emerging population, which may benefit from short-term use of mechanical support devices (MSD). We assessed outcomes of TAVRs performed with elective or emergent "bail-out" placement of MSD.

METHODS All patients undergoing TAVR at a high volume academic center who required MSD during index procedure between the years 2008-2015 were included.

RESULTS MSD were used in 12.4% (59/475) of all TAVRs (n=56 Edwards Sapien) of which 70% (n=41) were used as part of a planned strategy, and 30% (n=18) were used in "bail-out" situations. 25% (15/59) required cardiopulmonary resuscitation and 14% (8/59) required a second device (Impella or cardiopulmonary bypass, CPB after intra-aortic balloon pump, IABP). Mean STS was 10 ±2.66%, 86% had multivessel coronary artery disease and 69% underwent transapical TAVR. IABP (81%) was the most commonly used device followed by CPB and Impella. MSD were placed electively in patients with severe left ventricular dysfunction undergoing concomitant coronary intervention or balloon valvuloplasty whereas "bail-out" indications were procedural complications including cardiac arrest (VT/VF) (n=5), refractory hypotension (n=5), cardiac tamponade (n=2), severe aortic insufficiency (n=2), stone heart or LV failure (n=2), valve embolization (n=1), and left main obstruction + PCI (n=1). Mean duration of support was 1-day and device related complications were low (3%). In-hospital mortality in this extremely high risk population was 17% (8% for elective cases and 44% for emergent cases) compared to 5% in patients without MSD use (control group). Cardiogenic shock (50%) was the most common cause of in-hospital death followed by respiratory and multi-organ failure. The cumulative all-cause mortality at one-year follow-up was 71% (90% for elective and 50% for emergent cases) (Figure 1).



CONCLUSIONS Use of MSD in TAVR is associated with a significantly high mortality rates. The dismal long-term survival especially in the elective MSD group raises concerns about the use of MSD and perhaps futility of TAVR in this high-risk patient population.

CATEGORIES CORONARY: Hemodynamic Support and Cardiogenic Shock

KEYWORDS Mechanical circulatory support, Mortality, TAVR

TCT-190

Virtual 5-French Intra-Aortic Pumping using a Glidesheath Slender and 6-French Intra-aortic Balloon Catheter

Akihiko Takahashi,[1] Sho Hashimoto,[1] Norimasa Taniguchi,[1] Shunsuke Nakajima,[1] Takeshi Yamada,[1] Yukio MIzuguchi,[1] Tetsuya Hata[1]
[1]Sakurakai Takahashi Hospital, Kobe, Japan

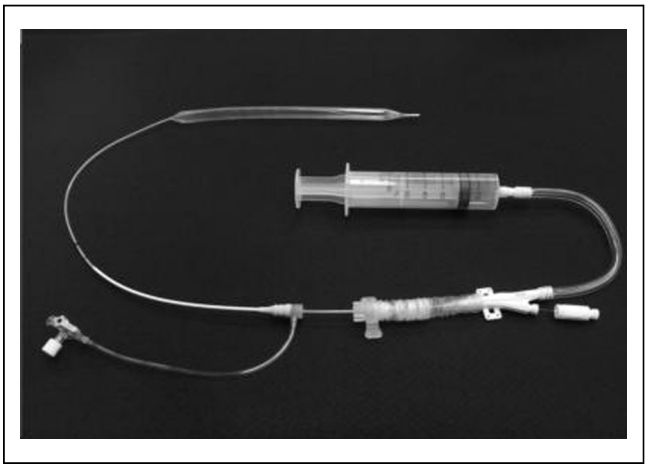
BACKGROUND The 6-Fr Glidesheath Slender that has a thinner wall structure and the same outer diameter compared to the conventional 5-Fr introducer has been introduced for trans-radial coronary intervention. The aim of this study was to evaluate the feasibility and safety of the 6-Fr Glidesheath Slender for use with the 6-Fr intra-aortic balloon pump (IABP) catheter.

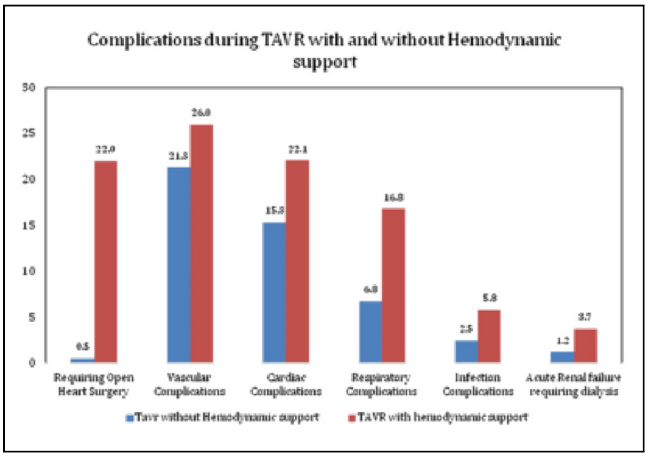
METHODS Between May 2014 and March 2015, 24 patients with acute coronary syndrome underwent percutaneous coronary intervention using a 6-Fr IABP catheter with a balloon volume of 30 ml through a 6-Fr Glidesheath Slender for support. The adverse events, including access site complications, kinking of the sheath during the procedure, and any evidence of balloon pump failure, were retrospectively investigated.

RESULTS Insertion of the IABP catheter through either the femoral or brachial artery was successful in all patients. The mean support time was 32.4 ± 22.0 h. No major hemorrhagic event or severe limb ischemia was observed. Kinking of the shaft occurred during insertion in one patient; however, the subsequent balloon pumping was well maintained and did not require exchange of the sheath or IABP catheter. No kind of IABP failure was observed.

Virtual 5-Fr IABP	
Baseline Patient Characteristics and Results	
Age (years)	68.9 ± 9.8
Male gender (%)	16 (66.7)
Height (cm)	159.5 ± 10.5
Body weight (kg)	59.0 ± 10.7
Body surface area (m^2)	1.60 ± 0.19
IABP approach site - femoral (%)	24 (95.8)
IABP approach site - brachial (%)	3 (12.5)
Support time of IABP (hr)	32.4 ± 22.0
Kinking of sheath introducer (%)	1 (4.2)
Access site complication (%)	0 (0)

CONCLUSIONS Although this sheath was originally designed to allow radial access, our results suggest that the use of the Glidesheath Slender is feasible for insertion of the 6-Fr IABP catheter through the brachial and femoral arteries, and may reduce vascular complications in patients who undergo percutaneous coronary intervention.





CATEGORIES CORONARY: Hemodynamic Support and Cardiogenic Shock

KEYWORDS ACS, IABP

TCT-191

Mechanical Circulatory Support Devices and Transcatheter Aortic Valve Replacement: A Multicenter experience

Vikas Singh,[1] Samir Patel,[2] Nileshkumar J. Patel,[3] Chirag Savani,[4] Nilay Patel,[5] Shilpkumar Arora,[6] Sidakpal S. Panaich,[7] Michael Cleman,[8] Abeel A. Mangi,[8] John K. Forrest,[9] Apurva Badheka[10]
[1]University of Miami Miller School of Medicine, Miami, FL; [2]Western Reserve Health Education, Youngstown, OH; [3]Staten Island University hospital, Staten Island, NY; [4]New York Medical College, Valhalla, NY; [5]Saint Peter's University Hospital, New Brunswick, NJ; [6]Icahn School of Medicine at Mount Sinai, New York, NY; [7]Detroid Medical Center, Detroit, MI; [8]Yale University, New Haven, CT; [9]Yale University School of Medicine, New Haven, CT; [10]University of Miami, Miami, FL

BACKGROUND Use of mechanical circulatory support (MCS) devices in cardiogenic shock (CS), acute Myocardial Infarction (MI), high-risk percutaneous coronary interventions (PCI) has been extensively studied. High-risk surgical patients with valvular heart diseases undergoing percutaneous treatment such as transcatheter aortic valve replacement (TAVR) represent an emerging population which may benefit from short term use of MCS.

METHODS We analyzed data from Nationwide Inpatient Sample (2011 and 2012) using the ICD, 9th Revision, Clinical Modification procedure codes.

RESULTS A total of 1,794 TAVR procedures (375 hospitals in the US) were identified of which 190 (10.6 %) utilized a MCS device (MCS group) and 1,604 (89.4%) did not (non-MCS group). A higher percentage of patients in MCS group underwent trans-apical TAVR (54% vs 13%, p<0.01), had AMI (6.4% vs. 2.1%, p<0.01), underwent percutaneous coronary intervention (5.4% vs. 2.1%, p<0.01), had cardiac arrest (10% vs. 2.3%, p=<0.01) (including ventricular fibrillation: 8% vs. 1%, p=<0.01) and cardiogenic shock (16.8% vs. 2.9%, p<0.01) when compared to the non-MCS group. On the other hand the patients in non-MCS group were older (71% vs. 37% >80 years old, p<0.01) and had a higher mean Charlson's comorbidity score (2.65±0.04 vs. 2±0.1, p<0.01).The use of MCS devices with TAVR was associated with significant increase in the in-hospital mortality (14.9% vs. 3.5%, p<0.01). The mean length (11.8±0.8 vs. 8.1±0.2 days, p<0.01) and cost ($68,997±3,656 vs. $55,878±653, p=0.03) of hospitalization were also significantly higher in MCS group. Ventricular fibrillation arrest, transapical access for TAVR and cardiogenic shock, were the most significant predictors of MCS use during TAVR. In the multivariate model, use of any MCS device was found to be an independent predictor of increased mortality (OR 3.5, 95% CI 2.6-4.6, p<0.0001) and complications (OR 3.3, 95% CI 2.8-3.9, p<0.0001) Figure 1. The propensity score matched analysis (n=160 in each group) also showed a similar result.

CONCLUSIONS The unacceptably high rates of mortality and complications coupled with a significant increase in the length and cost of hospitalization should raise concerns about utility of MCS devices during TAVR in this prohibitive surgical risk population.

CATEGORIES CORONARY: Hemodynamic Support and Cardiogenic Shock

KEYWORDS Mechanical circulatory support, Outcomes, TAVR

TCT-192

Percutaneous coronary interventions and hemodynamic support in the USA: A 5 years' experience

Vikas Singh,[1] Samir Patel,[2] Nileshkumar J. Patel,[1] Chirag Savani,[3] Nilay Patel,[4] Apurva Badheka[5]
[1]University of Miami Miller School of Medicine, Miami, FL; [2]Western Reserve Health Education, Youngstown, OH; [3]New York Medical College, Valhalla, NY; [4]Saint Peter's University Hospital, New Brunswick, NJ; [5]Yale School of Medicine, New Haven, CT

BACKGROUND Intra-aortic balloon pump (IABP) is the most commonly utilized mechanical support device in the cardiac catheterization laboratories. The last decade has witnessed the development and Food and Drug Administration approval of alternative percutaneous ventricular assist devices (PVADs) such as Impella (Abiomed, Danvers, MA, USA) and TandemHeart (Cardiac Assist, Inc., Pittsburgh, PA). Despite the lack of clear evidence of superiority, the utilization of PVAD has increased substantially in the last decade. The present study was designed to provide further insights into PCIs performed with hemodynamic support (IABP or PVAD) using the nation's largest available hospitalization database.

METHODS This was a cross sectional study using the Nationwide Inpatient Sample database between the years 2008-2012. Procedures were identified through appropriate clinical modification of International Classification of Diseases, ninth edition (ICD-9-CM) codes for PCI, PVAD and IABP placement. We used propensity-scoring method to establish matched cohorts in order to control for imbalances of patients' and hospitals' characteristics between the studied groups which may have influenced the primary outcome.

RESULTS A total of 18,094 procedures were identified over the five year study period between 2008 through 2012. IABP was the most commonly utilized hemodynamic support device (93%, n=16, 803) whereas 6% (n=1069) were performed with PVADs and 1% (n=222) utilized both IABP and PVAD. Patients in the PVAD group were older in age and had greater burden of co-morbidities when compared to those in the IABP group. A higher proportion of patients in the PVAD group were admitted emergently whereas IABP group had higher percentage of patients with cardiac arrest. We observed an in-hospital mortality rate of 20.1% for IABP, 12% with PVAD and 41% in IABP+PVAD group. Overall complications rate for this patient population was 36% for IABP vs. 26% for PVAD vs. 52% for the IABP+PVAD group. The use of PVADs was a significant predictor of reduced mortality (OR 0.16, 0.07-0.36, p<0.0001, as well as complications rate (OR 0.45, 0.32-0.64, p<0.001) when compared to IABP only in the sub-group of patients without AMI or cardiogenic shock. Propensity score matched analysis also showed a significantly lower mortality (9.9% vs. 15.1%; OR 0.62, 0.55-0.71, p<0.001) and complications (24.8% vs. 31.5%; OR